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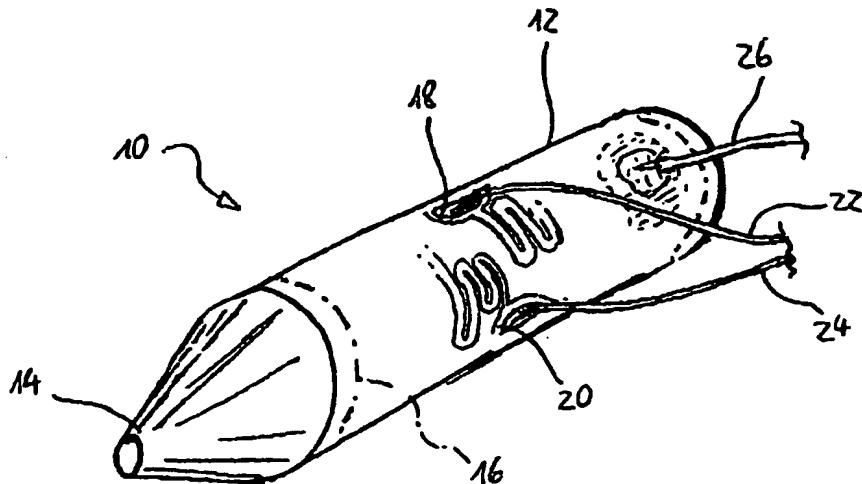
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(54) Title: METHOD FOR THE ATTACHMENT OF AN ELECTRICAL LEAD WIRE ON A SURFACE ELEMENT, AS WELL AS A HEATING ELEMENT, ESPECIALLY FOR A PLASTIC-SPRAYING DEVICE



(57) Abstract: An apparatus and methods for attaching electrical leads (22, 24) to a heating layer (16) of a heater are provided. An attachment material (50) is thermally sprayed over cords (32) of the electrical leads (22, 24), which are in contact with the heating layer (16) over a contact area (20). The attachment material (50) and the heating layer (16) are further thermally sprayed with a layer (52), which is an isolating material. The thermal sprayed connection between the electrical leads (22, 24) and the heating layer (16) thus provides more intimate contact and an improved electrical connection.

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# INTERNATIONAL SEARCH REPORT

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**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H05B3/46 B29C45/27

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H05B H01C B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 102 01 940 A1 (DAIMLERCHRYSLER AG) 31 July 2003 (2003-07-31) paragraphs '0024!, '0027!, '0028!; figure 1 -----	1-18
A	US 5 843 495 A (YAMADA ET AL) 1 December 1998 (1998-12-01) column 3, line 15 - line 25; figure 2 column 4, line 50 - line 55 -----	1-18
A	EP 0 262 833 A (ONODA CEMENT COMPANY, LTD; NAGASAKA, HIDEO) 6 April 1988 (1988-04-06) column 3 - column 4; figures 1-3 -----	1-18
A	WO 99/40039 A (MACHER DAVID ET AL) 12 August 1999 (1999-08-12) cited in the application page 11 - page 14; figures 1,2 -----	1-18
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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**INTERNATIONAL SEARCH REPORT**International Application No  
PCT/US2004/039956**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/052776 A (RUSSEGGER ELIAS) 26 June 2003 (2003-06-26) cited in the application page 11 – page 13; figures 1,2 -----	1-18

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/US2004/039956

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE 10201940	A1	31-07-2003	NONE		
US 5843495	A	01-12-1998	JP	2578583 B2	05-02-1997
			JP	8047946 A	20-02-1996
			DE	69519209 D1	30-11-2000
			DE	69519209 T2	23-05-2001
			EP	0698466 A1	28-02-1996
			TW	435339 Y	16-05-2001
EP 0262833	A	06-04-1988	JP	1911389 C	09-03-1995
			JP	6036121 B	11-05-1994
			JP	63078188 A	08-04-1988
			JP	7007231 B	30-01-1995
			JP	63167389 A	11-07-1988
			JP	7007232 B	30-01-1995
			JP	63167390 A	11-07-1988
			CA	1269697 A1	29-05-1990
			DE	3782224 D1	19-11-1992
			DE	3782224 T2	25-02-1993
			EP	0262833 A2	06-04-1988
			US	4743940 A	10-05-1988
WO 9940039	A	12-08-1999	AT	272032 T	15-08-2004
			AU	2622699 A	23-08-1999
			BR	9909096 A	30-04-2002
			CA	2320348 A1	12-08-1999
			CN	1296464 A ,C	23-05-2001
			DE	19810848 A1	12-08-1999
			DE	19825437 A1	19-08-1999
			DE	59910068 D1	02-09-2004
			WO	9940039 A1	12-08-1999
			EP	1051362 A1	15-11-2000
			ES	2226339 T3	16-03-2005
			JP	2002502796 T	29-01-2002
			US	6717109 B1	06-04-2004
WO 03052776	A	26-06-2003	DE	10162276 A1	17-07-2003
			CA	2471268 A1	26-06-2003
			WO	03052776 A2	26-06-2003
			EP	1459332 A2	22-09-2004
			US	2005025470 A1	03-02-2005